

ABSTRACT

Techniques for calibrating a laser scanner using a beam and camera which are swept in synchronization across a target object. A special calibration machine is disclosed. This machine mounts a completed scanner assembly and moves a target to collect camera output data from the scanner. The machine includes position sensing means which accurately determine the position of the target. The target position is then correlated to the camera output data for a variety of points. Curve-fitting techniques are then employed to create a mathematical function which converts the a given camera output datum to a distance from the scanner. The calibration machine is also used to create a table of correction factors which are used for different scanner mirror positions. The curve-fitting mathematical function, along with the table of error corrections, are then embedded in the software which converts the raw camera output data to computed points in three-dimensional space. The process does not require the development of complex optical equations.